

REMARKS

In the final Office Action, dated March 13, 2008, the Examiner rejected claims 65-76 under 35 U.S.C. §101 as allegedly being directed to non-statutory subject matter; rejected claims 37-57 under 35 U.S.C. §102(e) as allegedly being anticipated by U.S. Patent Application Publication 2003/0212666 (hereinafter "BASU"); and rejected claims 60-64, 68, 75 and 76 under 35 U.S.C. §103(a) as allegedly being unpatentable over BASU in view of U.S. Patent No. 6,243,713 (hereinafter "NELSON").

By way of the present amendment, Applicants propose amending independent claim 37 to improve form and to substantially incorporate the subject matter of dependent claims 46 and 47. Applicants further propose amending independent claim 49 to improve form and to substantially incorporate the subject matter of dependent claim 50. Applicants additionally propose amending independent claim 65 to improve form and to substantially incorporate the subject matter of dependent claims 75 and 76. Applicants also propose amending claims 38-45, 51-57, 63, 64, 66 and 68 to improve form. Applicants propose adding new claims 77-89. Applicants further propose canceling claims 46-48, 50, 58-62, 75 and 76 without prejudice or disclaimer. No new matter would be added by entry of the present amendment. If the proposed claim amendments are entered, claims 37-45, 49, 51-57, 63-74 and 77-89 would be pending. Reconsideration of the outstanding rejection of claims 37-45, 49, 51-57 and 63-74 is respectfully requested in view of the proposed claim amendments and the following remarks.

At the outset, Applicants note that the initialed copy of the form PTO-1449 (submitted with an information disclosure statement (IDS) on December 21, 2006) that was returned with the final Office Action has not been initialed by the Examiner to indicate that all of the

references were considered. In particular, the reference cited in the "other documents" section of the form PTO-1449 was not initialed by the Examiner. Applicants request that a new copy of this form PTO-1449 be returned along with the next Office communication with all of the references on this form being initialed as having been considered by the Examiner.

REJECTIONS UNDER 35 U.S.C. §101

On page 2, the final Office Action rejects pending claims 65-74 under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter. Specifically, the final Office Action alleges that claims 65-74 "are system claims comprising only means for limitations with no accompanying hardware, without any accompanying hardware the claims are software per se and thus not a valid 'system' within the means of U.S.C. 101." Applicants respectfully disagree with the assertions of the final Office Action regarding claims 65-76 and submit that these claims are directed to statutory subject matter. However, for the sake of expediting prosecution, Applicants propose amending claim 65 to recite a "system implemented within a computer device." Applicants believe that this proposed claim amendment should alleviate the concerns that the Examiner has with respect to claims 65-74 under 35 U.S.C. § 101. In view of the proposed amendment to claim 65, withdrawal of the rejection of claims 65-74 under 35 U.S.C. § 101 is respectfully requested.

REJECTIONS UNDER 35 U.S.C. §102

On pages 2 and 9, the final Office Action rejects pending claims 37-45, 49, 51-57 and 65-74 under 35 U.S.C. §102(e) as allegedly being anticipated by BASU. Applicants respectfully

traverse.

Proposed independent claim 37 recites a method that includes receiving a search query comprising a plurality of search terms from a user, where the search query further includes a plurality of user-selected operators associated with one of the search terms of the search query and where the plurality of operators comprise a same operator repeated multiple times; broadening the one of the search terms based on the plurality of user-selected operators to produce a broadened search query, where broadening the one of the one of the search terms comprises: broadening the one of the search terms to an extent determined by a number of times the same operator is repeated; and executing a search using the broadened search query.

A proper rejection under 35 U.S.C. §102 requires that a reference teach every aspect of the claimed invention. See M.P.E.P. § 2131. BASU does not disclose or suggest the combination of features recited in Applicants' claim 37. For example, BASU does not disclose or suggest, among other features, broadening the one of the search terms based on the plurality of user-selected operators to produce a broadened search query, where the plurality of operators comprise a same operator repeated multiple times and where broadening the one of the one of the search terms comprises broadening the one of the search terms to an extent determined by a number of times the same operator is repeated, as recited in proposed claim 37.

BASU discloses the receipt of a search query 106 at a query module 202 from a user, where the search query 106 may include a textual query that further includes words, phrases or sentences, or a content query that further includes audio, images, image sequences, video or other spatial or time-series media (paragraph 0032; FIG. 1). A query expansion module 204 then probabilistically expands the received query into multiple sub-queries (paragraphs 0034 and

0041) using an expanding operation 304. For example, the query “beach” may be expanded into the sub-queries “sky,” “water,” and “sand” (paragraph 0041). The expanding operation 304 assigns a confidence level to each expanded sub-query based on a probabilistic model that indicates a probability that each expanded sub-query is relevant to the received query (paragraphs 0038 and 0041). The confidence level may be used by the system or a user for evaluating the relevance of future query expansion operations (paragraphs 0041 and 0042). Sub-query confidence levels associated with expanded sub-queries may be adjusted based on user feedback that indicates the user's evaluation of the relevance of each sub-query to the query (paragraph 0042). For example, if a user indicates that the sub-query “smoke” is not relevant to a “rocket launch” query, then the system may assign a lower probability of relevance to the “smoke” sub-query in future iterations of “rocket launch” queries (paragraph 0038). The user's feedback, thus, serves to define future query expansion operations 304 (paragraph 0043). A processing module 206 then retrieves sub-query results from a database using the expanded sub-queries (paragraph 0036).

BASU, therefore, discloses the expansion of a textual query received from a user into multiple sub-queries based on a system determined probability that the sub-queries are relevant to the query. BASU further discloses that user feedback may be used to adjust probabilities of relevance of given expanded sub-queries to certain queries, thereby impacting future query expansion operations. BASU, however, does not disclose, suggest or even mention that the textual query received from the user includes multiple operators, where the multiple operators include a same operator repeated multiple times, as recited in proposed claim 37. BASU further does not disclose, suggest or even mention broadening of one of the search terms of the search

query to an extent determined by a number of times the same operator is repeated in the multiple operators, as also recited in proposed claim 37.

In rejecting claim 37, and claims 46 and 47 (which have been incorporated into proposed claim 37), the Office Action specifically relies on paragraphs 0032, 0033, 0038, 0041 and 0043 of BASU for allegedly disclosing the features of these claims. These sections of BASU, or any other sections of BASU for that matter, do not disclose or suggest the above-noted features of claim 37.

At paragraph 0032, BASU discloses:

The system 108 includes a query module 202 configured to receive a search query. It is contemplated that the query submitted to the query module 202 may be in the form of a textual query and/or a content query. A textual query is also referred to herein as an abstract exemplar and includes words, phrases, and sentences. Examples of a textual query are the word "sunset" and the phrase "rocket launch". A content query is also referred to herein as a content exemplar and specifies a query which includes, but is not limited to, audio, images, image sequences, video, and other spatial as well as time-series media. Examples of content queries are music clips, digital photographs, real-time surveillance sequences, movie videos, and electrocardiograms. It should be noted that text is excluded from the definition of content exemplars and is treated separately. Thus, a query received by the query module 202 is expected to be in the form of text, content, or a combination of the two.

This section of BASU merely discloses the receipt of a search query at a query module 202, where the search query may include a textual query and/or a content query. The textual query may include words, phrases and sentences. The content query may include a music clip, a digital photograph, a movie video, etc. This section of BASU, however, does not disclose, or even suggest a received search query that includes multiple operators, where the multiple operators further include a same operator repeated multiple times, as recited in proposed claim 37. This section of BASU further does not disclose, suggest, or even mention broadening one of the

search terms of the search query to an extent determined by a number of times the same operator is repeated in the multiple operators, as further recited in proposed claim 37.

At paragraph 0033, BASU discloses:

A query may be subjective or objective. For example, the query "sunset" refers to the setting of the sun and, hence, is an abstract objective query. On the other hand, the query "beautiful evening" is termed as an abstract subjective query in so far as it is based on the user's subjective interpretations of what constitutes a beautiful evening. It is contemplated that the present invention can search both objective and subjective queries. Although subjective queries are by nature particular to the user, the query system 108 is able to learn the user's preferences through user feedback, thereby adapting the search results to the user's definition of subjective concepts.

This section of BASU merely discloses that the system may execute a search using both objective queries and subjective queries, where a subjective query is based on the user's subjective interpretations of given search terms. This section of BASU further discloses that a query system 108 has the capability to learn a user's preferences via feedback from the user permitting the query system 108 to adapt search results provided to the user based on the user's preferences. This section of BASU, however, does not disclose or even suggest a received search query that includes multiple operators, where the multiple operators include a same operator repeated multiple times, as recited in proposed claim 37. This section of BASU further does not disclose, suggest, or even mention broadening one of the search terms of the search query to an extent determined by a number of times the same operator is repeated in the multiple operators, as further recited in proposed claim 37.

At paragraph 0038, BASU discloses:

As mentioned above, the query system 108 of the present invention is adaptive. Specifically, the system 108 includes an adaptation module 212 that attempts to refine the search results as queries are repeated over time. The adaptation module

212 is capable of modifying the query expansion module 204, the sub-query processing module 206, and the merging module 208 according to user and system feedback. For example, if a user indicates that the sub-query term "smoke" is not relevant in a "rocket launch" query, the adaptation module 212 may adaptively assign a lower probability of relevance to the "smoke" sub-query in future iterations of "rocket launch" queries. In other words, the adaptation module 212 modifies the query expansion module 204 so that the term "smoke" is assigned a lower confidence level in a "rocket launch" query. The parametric learning techniques of the adaptation module 212 may use a generative approach, including, but not limited to, probabilistic models and graphical probabilistic models and/or a discriminant approach, including, but not limited to, kernel machines, such as support vector machines and neural networks. The adaptation process of the system 108 is discussed in greater detail below.

This section of BASU merely discloses the use of parametric learning techniques for assigning probabilities of relevance to sub-query terms that have been expanded from a given textual query. Thus, a first sub-query expanded from a textual query that is more relevant to that query will have a higher probability of relevance assigned to it than a second sub-query expanded from the textual query. This section of BASU, however, does not disclose or even suggest a received search query that includes multiple operators, where the multiple operators include a same operator repeated multiple times, as recited in proposed claim 37. This section of BASU further does not disclose, suggest or even mention broadening one of the search terms of the search query to an extent determined by a number of times the same operator is repeated in the multiple operators, as further recited in proposed claim 37.

At paragraph 0041, BASU discloses:

In expanding operation 304, the query is expanded to sub-queries, with at least one sub-query being expanded probabilistically. As discussed above, the present invention may expand a textual exemplar into various textual sub-queries and content sub-queries. As an illustration of such query expansion, consider the query "beach" expanded to the sub-queries "sky", "water", and "sand". This example underlines the probabilistic nature of query expansion in that some

images of beaches may not show the sky. Thus, the mapping of "beach" to "sky", "water", and "sand" is probabilistic rather than deterministic. The present invention is configured to handle such uncertainty by assigning a confidence level to each probabilistic sub-query. In a specific embodiment of the invention, the confidence level may be assigned using a probability mass table.

This section of BASU discloses the expansion of a query into sub-queries, where a probability mass table is used to assign a confidence level, that represents a probability of relevance (see paragraph 0038), to each expanded probabilistic sub-query. This section of BASU, however, does not disclose or even suggest a received search query that includes multiple operators, where the multiple operators include a same operator repeated multiple times, as recited in proposed claim 37. This section of BASU further does not disclose, suggest, or even mention broadening one of the search terms of the search query to an extent determined by a number of times the same operator is repeated in the multiple operators, as further recited in proposed claim 37.

At paragraph 0043, BASU discloses:

The query expansion operation 304 may be defined by the user or developed by the system through user interaction. It is contemplated that query to sub-query expansion may be one-to-one, one-to-many, many-to-one, or many-to-many. Referring now to FIG. 4, an example of a many-to-many query expansion process is shown. The query "outdoor" 402 is shown expanded to sub-queries "trees" 404 and "sky" 406, and the query "beach" 408 is mapped to sub-queries "sky" 406 and "sand" 410. Thus, queries may be expanded to a common sub-query while also being expanded to distinct sub-queries.

This section of BASU merely discloses the use of a query expansion operation 304 to expand a textual query from one or more sub-queries, and further provides a specific example of the expansion of the query "outdoor" 402 to sub-queries "trees" 404 and "sky" 406. In the "Response to Arguments" section (pgs. 14 and 15), the final Office Action asserts that this section of BASU "discloses that the expansion operator may be defined by the user, therefore

since the user may define the operator the user certainly must be able to selected [sic] their defined operator.” Applicants respectfully traverse and submit that paragraph 0043 is related to an expansion operation 304 in which previous user interaction of the user can be used to adjust the query expansion process. Paragraph 0043 does not disclose, suggest or mention an operator being associated with one of the search terms of a search query and further does not disclose or suggest a received search query that includes multiple operators, where the multiple operators include a same operator repeated multiple times, as recited in proposed claim 37. This section of BASU further does not disclose or suggest broadening one of the search terms of the search query to an extent determined by a number of times the same operator is repeated in the multiple operators, as further recited in proposed claim 37.

Since BASU does not disclose or suggest each and every feature of claim 37, BASU cannot anticipate claim 37. Withdrawal of the rejection of claim 37 under 35 U.S.C. §102 is, therefore, respectfully requested.

Claims 38 and 40-45 depend from claim 37 and, therefore, are not anticipated by BASU for at least the reasons set forth above with respect to claim 37.

Independent claim 39 recites a method that includes receiving a search query comprising a plurality of search terms; broadening one of the plurality of search terms; excluding the broadened one of the plurality of search terms from the search query; executing a search based on the search query, after excluding the broadened one of the plurality of search terms, to provide search results; and evaluating the search results relative to the excluded search term using categorical or clustered distinctions. In rejecting claim 39, the Office Action (pg. 4) relies on paragraphs 0043 and 0004 of BASU for allegedly disclosing the above-noted features of

claim 39. Applicants submit that the cited sections of BASU, or any other section of BASU for that matter, do not disclose or suggest, among other features, excluding the broadened one of the plurality of search terms from the search query; executing a search based on the search query, after excluding the broadened one of the plurality of search terms, to provide search results; and evaluating the search results relative to the excluded search term using categorical or clustered distinctions, as recited in claim 39.

Paragraph 0043 has been reproduced above. As discussed above, this section of BASU merely discloses the use of a query expansion operation 304 to expand a textual query from one or more sub-queries, and further provides a specific example of the expansion of the query "outdoor" 402 to sub-queries "trees" 404 and "sky" 406. This section of BASU, however, does not disclose, suggest or have anything to do with, excluding the broadened one of the plurality of search terms from the search query and, therefore, cannot disclose or suggest executing a search based on the search query, after excluding the broadened one of the plurality of search terms, to provide search results or evaluating the search results relative to the excluded search term using categorical or clustered distinctions, as recited in claim 39.

At paragraph 0004, BASU discloses:

Another search strategy is the use of document classification. In this approach, documents are first classified using a document classification algorithm. Infrequent terms found in the document class are considered similar and are clustered in the same term class, referred to as a thesaurus class. The indexing of documents and queries is enhanced either by replacing a term by a thesaurus class or by adding a thesaurus class to the index data. However, the retrieval effectiveness depends strongly on some parameters that are often difficult to determine. See, for example, C. J. Crouch, B. Young, Experiments in Automatic Statistical Thesaurus Construction, SIGIR'92, 15th Int. ACM/SIGIR Conf. on R & D in Information Retrieval, Copenhagen, Denmark, pp. 77-87, June 1992. Furthermore, commercial databases typically contain millions of documents and

are highly dynamic. Often the number of documents is much larger than the number of terms in the database. Consequently, document classification is much more expensive and has to be done more frequently than the simple term classification mentioned above.

This section of BASU discloses the classification of documents using a document classification algorithm where infrequent terms found in a document class are considered similar and are clustered in a same class in a similarity thesaurus. Documents and queries may then be indexed by replacing a given term from the documents or queries by terms clustered in a thesaurus class. This section of BASU, thus, discloses the clustering of similar terms in a similarity thesaurus and indexing documents and queries using terms from the documents and the queries and from the similarity thesaurus. This section of BASU does not disclose, suggest, or have anything to do with, excluding the broadened one of the plurality of search terms from the search query and, therefore, cannot disclose or suggest executing a search based on the search query, after excluding the broadened one of the plurality of search terms, to provide search results or evaluating the search results relative to the excluded search term using categorical or clustered distinctions, as recited in claim 39.

Since BASU does not disclose each and every feature of claim 39, BASU cannot anticipate claim 39. Withdrawal of the rejection of claim 39 is, therefore, respectfully requested.

Proposed independent claim 49 recites a computer-readable medium containing instructions executable by at least one processor that includes one or more instructions for receiving a search query comprising a plurality of search terms from a user, where the search query includes multiple symbols which define a user-assigned strength of broadening associated with one of the search terms of the search query; one or more instructions for broadening the one

of the search terms to an extent determined by the user-assigned strength to produce a broadened search query, where a number of the multiple symbols determines the extent to which the one of the search terms is broadened; and one or more instructions for executing a search based on the broadened search query.

In rejecting claim 49, the Office Action (pgs. 6-7) relies on paragraph 0038 for allegedly disclosing the features of claim 48. Applicants submit that the cited section of BASU, or any other section of BASU for that matter, do not disclose or suggest, among other features, one or more instructions for receiving a search query comprising a plurality of search terms from a user, where the search query includes multiple symbols which define a user-assigned strength of broadening associated with one of the search terms of the search query or one or more instructions for broadening the one of the search terms to an extent determined by the user-assigned strength to produce a broadened search query, where a number of the multiple symbols determines the extent to which the one of the search terms is broadened, as recited in claim 49.

Paragraph 0038 has been reproduced above. As discussed above, this section of BASU merely discloses the use of parametric learning techniques for assigning probabilities of relevance to sub-query terms that have been expanded from a given textual query. Thus, a first sub-query expanded from a textual query that is more relevant to that query will have a higher probability of relevance assigned to it than a second sub-query expanded from the textual query. This section of BASU, however, does not disclose or suggest one or more instructions for receiving a search query comprising a plurality of search terms from a user,

where the search query includes multiple symbols which define a user-assigned strength of broadening associated with one of the search terms of the search query, as recited in proposed claim 49. This section of BASU further does not disclose or suggest one or more instructions for broadening the one of the search terms to an extent determined by the user-assigned strength to produce a broadened search query, where a number of the multiple symbols determines the extent to which the one of the search terms is broadened, as also recited in claim 49.

Since BASU does not disclose each and every feature of claim 49, BASU cannot anticipate claim 49. Withdrawal of the rejection of claim 49 is, therefore, respectfully requested.

Claims 51-57 depend from claim 49 and, therefore, are not anticipated by BASU for at least the reasons set forth above with respect to claim 49.

Proposed amended independent claim 65 recites substantially similar features to (though possibly having different scope than) proposed claim 49. Proposed independent claim 65, therefore, is not anticipated by BASU for similar reasons to those set forth above with respect to claim 49.

Claims 66-74 depend from claim 65. These claims are not anticipated by BASU for at least the reasons given above with respect to claim 65.

On page 10, the final Office Action rejects pending claims 63, 64 and 68 under 35 U.S.C. §103(a) as allegedly being unpatentable over BASU in view of NELSON. The final Office Action cites to NELSON for allegedly disclosing various features of dependent claims 63, 64 and 68. Without acquiescing in the Examiner's allegations with respect to claims 63,

64 and 68, Applicants submit that NELSON does not remedy the deficiencies in the disclosure of BASU noted above with respect to claims 49 and 65, from which claims 63 and 64 and claim 68 depend, respectively. Therefore, claims 63, 64 and 68 are patentable over BASU and NELSON for at least the reasons given above with respect to claims 49 and 65. Withdrawal of the rejection of claims 63, 64 and 68 under 35 U.S.C. §103 is, thus, respectfully requested.

New claims 77-79 depend from claim 39 and, therefore, are not anticipated by BASU for at least the reasons set forth above with respect to claim 39.

New claims 80-84 recite a method that includes receiving a search query comprising a search term; obtaining a set of broadened search terms based on the search term; presenting the set of broadened search terms as a set of corresponding hyperlinks in a user interface; receiving selection of a subset of hyperlinks of the set of hyperlinks to select a subset of the broadened search terms; broadening the search query using the selected subset of broadened search terms; and executing a search using the broadened search query. Neither BASU nor NELSON, either singly or in any reasonable combination, discloses or suggests the combination of features recited in claims 80-84.

New claims 85-89 recite a method that includes receiving a search query comprising a search term; obtaining a set of broadened search terms based on the search term; presenting a set of checkboxes in conjunction with the set of broadened search terms, where each checkbox of the set of checkboxes corresponds to one broadened search term of the set of broadened search terms; receiving selection of a subset of the set of checkboxes to select a subset of the broadened search terms; broadening the search query using the selected subset of broadened

search terms; and executing a search using the broadened search query. Neither BASU nor NELSON, either singly or in any reasonable combination, discloses or suggests the combination of features recited in claims 80-84.

In view of the foregoing amendments and remarks, Applicants respectfully request that this amendment be entered. Applicants further request the Examiner's reconsideration and withdrawal of the outstanding rejections, and the timely allowance of this application. Applicants submit that the proposed amendments do not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner. In fact, the proposed claim amendments merely cancel claims, amend independent claims to substantially incorporate dependent claims, and add new dependent claims. Furthermore, Applicants submit that the entry of this amendment would place the application in better form for appeal in the event that the application is not allowed.

As Applicants' remarks with respect to the Examiner's rejections overcome the rejections, Applicants' silence as to certain assertions by the Examiner in the Office Action or certain requirements that may be applicable to such rejections (e.g., whether a reference constitutes prior art, reasons for modifying a reference and/or combining references, assertions as to dependent claims, etc.) is not a concession by Applicants that such assertions are accurate or that such requirements have been met, and Applicants reserve the right to dispute these assertions/requirements in the future.

To the extent necessary, a petition for an extension of time under 37 CFR § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,
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